

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A communication semiconductor integrated circuit device, comprising:

a transmitting oscillator including at least constituent elements excluding inductance elements, which are formed over a semiconductor chip;

a first external terminal which is coupled to the transmitting oscillator for outputting outputs a signal generated by the transmitting oscillator therethrough;

a phase detection circuit which compares the-a phase of a reference signal and the-a phase of a feedback signal, and thereby which is coupled to the transmitting oscillator for controlling controls the transmitting oscillator in accordance with the phase difference;

a second external terminal which receives a signal supplied from outside that is related to an output of the transmitting oscillator; and

a signal combinational circuit which is coupled to the second external terminal and which combines the signal inputted to through the second external terminal and a signal having a predetermined frequency,

wherein the signal combinational circuit comprises:
a differential circuit including a pair of differential input terminals, and attenuation means that attenuates the signal inputted input to the second external terminal, and transmits

wherein the attenuated signal is provided between one differential input terminal of the signal combinational circuit and the second external terminal, and the other differential input terminal of the signal combinational circuit is connected to a third external terminal via elements identical to elements that constitute the attenuation means, and

wherein the signal combination circuit is coupled to the phase detection circuit for providing the feedback signal.

2. (currently amended) A communication semiconductor integrated circuit device according to claim 1, wherein the third external terminal is a terminal to which a significant signal is ~~inputted~~ input from outside and set so as not to output a significant signal from inside.

Claim 3 (canceled)

4. (currently amended) A communication semiconductor integrated circuit device according to claim 1, further comprising:

~~an amplitude detection circuit which compares the amplitude of a signal inputted to the second external terminal and generated by combination with the signal having the predetermined frequency by the signal combinational circuit~~the feedback signal and the amplitude of the reference signal and generates a signal corresponding to ~~the~~a difference in amplitude between the feedback and reference signals, and a fourth external terminal which outputs a voltage corresponding to the ~~output of~~signal output from the amplitude detection circuit therethrough.

5. (currently amended)A communication semiconductor integrated circuit device according to claim 1, wherein the signal combinational circuit comprises:

a Gilbert cell comprising bipolar transistors, the signal inputted-input to the second external terminal is inputted-input to an emitter terminal of one of the lower differential input transistors of the Gilbert cell, and the third external terminal is connected to an emitter terminal of the other of the lower differential input transistors of the Gilbert cell via the elements identical to the elements constituting the attenuation means.

6. (currently amended)A communication semiconductor integrated circuit device according to claim 1, wherein the signal combinational circuit is a mixer which generates a signal of a frequency equivalent to the-a difference between the frequency of the signal inputted-input to the second external terminal and the frequency of the signal having the predetermined frequency.

7. (currently amended)A communication semiconductor integrated circuit device according to claim 1, further comprising:

an oscillator which generates the signal having the predetermined frequency; and

a second mixer which combines the signal generated by the oscillator and the signal generated by the transmitting oscillator and generates a signal having a frequency component equivalent to the-a difference in frequency

therebetweenbetween the signal generated by the oscillator and the signal generated by the transmitting oscillator,

wherein the output signal of the second mixer is supplied to the phase detection circuit.

8. (currently amended)A communication semiconductor integrated circuit device according to claim 7, further comprising:

switching means which selects and supplies any of the output signal of the second mixer and the feedback signal inputted to the second external terminal and generated by combination with the signal having the predetermined frequency by the signal combinational circuit and supplies the same to the phase detection circuit.

9. (currently amended)A wireless communication system, comprising:

a communication semiconductor integrated circuit device, said communication semiconductor integrated circuit device including:

a transmitting oscillator including at least constituent elements excluding inductance elements, which are formed over a semiconductor chip:
a first external terminal which is coupled to the transmitting oscillator for outputting outputs a signal generated by the transmitting oscillator therethrough;

a phase detection circuit which compares the-a phase of a reference signal and the-a phase of a feedback signal, and thereby which is coupled to

the transmitting oscillator for controlling controls the transmitting oscillator in accordance with the phase difference;

a second external terminal which receives a signal supplied from outside that is related to an output of the transmitting oscillator;

a signal combinational circuit which is coupled to the second external terminal and which combines the signal inputted input to through the second external terminal and a signal having a predetermined frequency;

an amplitude detection circuit which compares amplitude between the signal combined by the signal combinational circuit and the reference signal and feedback signal and detects the difference in amplitude;

voltage generating means which generates a voltage corresponding to the detected amplitude difference; and

a third external terminal which outputs the generated voltage therethrough generated by the voltage generating means;

a power amplifier which amplifies the signal outputted output through the first external terminal with gain corresponding to the voltage outputted output through the third external terminal and outputs the same mean amplified signal;

output detecting means which detects the output of the power amplifier; and

attenuation means which attenuates the signal detected by the output detecting means and inputs the same provide the attenuated signal to the second external terminal,

wherein the attenuation means sets the amount of attenuation of the detected signal in such a manner that when the power amplifier is operating at

the minimum output level, the level of the detected signal inputted-input to the second external terminal becomes greater than the level of noise jumped from the first external terminal to the second external terminal.

10. (currently amended) A wireless communication system according to claim 89, wherein the signal combinational circuit comprises:

 a differential circuit including a pair of differential input terminals,

 attenuation means that attenuates the signal inputted-input to the second external terminal,

wherein the and transmits the same attenuated signal is provided between one differential input terminal of the signal combinational circuit and the second external terminal, and the other differential input terminal of the signal combinational circuit is connected to a fourth external terminal via elements identical to elements that constitute the attenuation means, and

wherein a resistive element is provided between the fourth external terminal and an external constant voltage terminal of the communication semiconductor integrated circuit device.

11. (currently amended) A wireless communication system according to claim 89, further comprising:

 a baseband circuit which generates and outputs an In-phase and Quadrature (I/Q) signal corresponding to transmit data and outputs the same,

wherein the communication semiconductor integrated circuit device includes a modulator which performs quadrature modulation in accordance with the I/Q signal supplied from the baseband circuit, and supplies the signal

modulated by the modulator to the phase detection circuit and the amplitude detection circuit as the reference signal.

12. (currently amended) A communication semiconductor integrated circuit device, comprising:

a transmitting oscillator including at least constituent elements excluding inductance elements, which are formed over a semiconductor chip;

a first external terminal which is coupled to the transmitting oscillator for outputting outputs a signal generated by the transmitting oscillator therethrough;

a phase detection circuit which compares the-a phase of a reference signal and the-a phase of a feedback signal, and thereby which is coupled to the transmitting oscillator for controlling controls the transmitting oscillator in accordance with the phase difference;

a second external terminal which receives a signal supplied from outside that is related to an output of the transmitting oscillator; and

a signal combinational circuit which is coupled to the second external terminal and which combines the signal inputtedinput to-through the second external terminal and a signal having a predetermined frequency,

wherein the signal combinational circuit includes:
a differential circuit including a pair of differential input terminals,
first attenuation means is-provided between one differential input terminal of the signal combinational circuit and the second external terminal, and

second attenuation means is provided between the other differential input terminal of the signal combinational circuit and a third external terminal supplied with a predetermined potential.